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Smyth, C. H.—Metamorphism of a Gabbro occurring in St. Lawrence Co., N. Y. Extr. Amer. Journ. Sci., Vol. I, 1896. From the author.

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Woodward, H.—Address delivered at the Anniversary Meeting of the Geological Society of London, Feb. 15, 1895.

General Notes.

PETROGRAPHY.[1]

Petrography of the Viterbo Region, Italy.—Washington[2] continues his description of the young volcanic rocks of Italy in an article dealing with the lavas of the interesting Monti Cimini, Monte Venere and Monti Vico. The principal rocks of the district are vulsinite, composed of phenocrysts of orthoclase, plagioclase, diopside and biotite in a trachytic groundmass consisting of diopside, magnetite and the feldspars; ciminite composed of small olivine, diopside, plagioclase, and sanidine phenocrysts in an andesitic felt of diopside needles, magnetite grains and feldspar laths—both orthoclase and plagioclase; peperino—a trachy andestic tuff, and a series of leucite rocks belonging with the leucite phonolites. The phonolites from Monte Venere are characterized by the presence of phenocrysts of biotite. Analyses of the three principal types are given as follows:

	SiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	H_2O	TiO_2	
Vulsinite	57.32	19.85	2.21	2.35	1.60	3.82	3.22	9.15	.57		=100.09
Ciminite	55.44	18.60	2.09	4.48	4.75	6.76	1.79	6.63	.25	.16	=100.75
Leucite phonolite	55.21	19.81	2.69	2.86	1.68	4.61	3.13	8.45	.99.	tr	= 99.43

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[1] Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

[2] Journal of Geology, IV, p. 826.

Missourite, a New Leucite Rock.—The body of rock constituting the core of one of the volcanic centres of the Highwood Mountains, Montana, is a new type of leucite rock named Missourite by Weed and Pirsson.[3] The rock is in the form of a stock intrusive in Cretaceous shale. It varies in character in different places, but is of the same general nature in all. The coarsest grained variety is a dark gray granular rock composed of grains of fresh olivine, of pale green augite, of brownish-yellow biotite, apatite and iron oxides embedded in perfectly clear leucite in formless masses. The composition of the mineral is as follows:

SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	K_2O	Na_2O	H_2O	Total
54.46	22.24	.68	tr	.10	18.86	.70	2.29 =	99.33

A slight zeolitization has occurred in some of the leucite, the new products being analcite and a new potash zeolite analogous to natrolite. An analysis of the rock yielded:

SiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	H_2O	TiO_2	P_2O_5	BaO	SrO	SO_3	Cl	Total
46.06	10.01	3.17	5.61	14.74	10.55	1.31	5.14	1.44	.73	.21	.32	.20	.05	.03 =	99.57

This is very close to the composition of absarokite.[4] Since the structure of the missourite is granitic, the author classifies it as the plutonic equivalent of the leucite basalts.

The Crystalline Schists of the Spessart.—According to Klemm[5] the crystalline rocks of the Spessart, Germany, comprise granites and schists of unknown age, with which are associated basic intrusive and effusive rocks and their tuffs. The schists occur on the periphery of a great granite mass, dykes from which have intruded them. Among the foliated rocks are quartz-schists, mica-schists, staurolite-schists, calc-silicate hornfels, limestone, amphibolites and metamorphosed sandstones and graywackes. The biotite, staurolite and other similar constituents exhibit no evidences of the action of pressure upon them, although the rocks in which they occur are highly schistose. This fact leads the author to conclude that the foliation of the rocks was imposed upon them when in a plastic state and not after they had become rigid. The amphibolites are thought to be metamorphosed tuffs. The granite is a biotitic variety with a foliation produced by pressure, but in this case as in the case of the schists, the foliation was produced before the rock finally solidified. In the character of its intrusion the granite is laccolitic. After discussing the nature of the schists and gneisses of this region the author concludes his paper with the statement that the term gneiss should be used in a geological sense only when the origin of the rock designated by it is unknown. He further surmises that many gneiss areas will, upon close study, be found to be underlain by granites and various schists whose nature can be learned.

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[3] Amer. Jour. Sci., Vol. II, 1896, p. 315.

[4] Cf. AMERICAN NATURALIST, p. 299.

[5] Zeits. deutsch. geol. Geo., XLVII, p. 581.

Instruments.—Leiss[6] describes a number of new instruments for the use of petrographers. They are made under the direction of Fuess of Berlin. The first instrument is a microscope with nicols so arranged as to be capable of revolution independent of the stage. The stand is constructed for the attachment of the ordinary accessories. The three models at present on the market are known as VII, VIIa, VIII. The second instrument is a simplified form of Federow's universal stage, admitting of the revolution of an object about two axes while under the microscopic objective. The third is the apparatus planned by Klein to aid in the examination of thin sections immersed in liquids. The other instruments described are a compensator-ocular, invented by J. Amann, a mica-wedge after the pattern proposed by Federow, a vertical illuminator for use with opaque objects, a very simple microscope camera made to fit over the ocular of an ordinary microscope and an achromatic condenser for use with the same.

Diller[8] describes an improved form of Smeeth's separating tube for the separation of rock powders by means of heavy solutions. The new tube possesses several advantages over the Harada and the Brögger tubes.

Petrographical Notes.—The reciprocal relations existing between hornblende and augite in plutonic and volcanic rocks is explained by Becke[9] as due to the fact that hornblende contains a small percentage of constitutional water in its molecule, and that it can therefore be formed only under certain conditions of pressure and temperature when water is present in a magma. When the conditions of pressure and temperature are not right augite forms in place of hornblende. A figure showing curves exhibiting the possibilities of formation of the two minerals explains the author's views.

A massive holocrystalline rock composed of biotite, cyanite and cordierite, with apatite and rutile as accessories, was discovered by Mc

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[7] Neues Jahrb. f. Min. B.B. X, 1896, p. 412.

[8] Science, June 12. 1896, p.

[9] Sitzb. deutsch. naturw.-med. Ver. f. Böhmen. Lotos, 1896, No. 5.

Mahon[10] as a bowlder in the bed of the Satlej River near Wangtu in the N. W. Himalayas. It is regarded as a product of contact action. Its original form is thought to have been diabasic or basaltic.

In the pre-Cretaceous, Cretaceous and Eocene beds of northwestern Oregon, Diller[11] finds glaucophane schists, sandstones, limestones, basalts, tuffs and shales.

The granophyres of Strath, Skye, according to Harker[12] are filled with gabbro inclusions where they intrude a great mass of volcanic agglomerate. They are denser and darker than the normal granophyres lying north of them, in which no basic inclusions are known. The gabbro debris in the granophyres is more or less dissolved, those fragments that have most nearly disappeared being represented by isolated grains of augite, hypersthene, altered olivine, magnetite and occasionally plagioclase. The pyroxenes have suffered greater or less change into hornblende and the olivine into pilitic amphibole. The new rock formed differs from the normal granophyre in its structure, in that it appears to contain nests of secondary minerals. Other fragments besides gabbro were also noticed in the same rock.

In the course of an article on the mineral deposits of the Central Alps, Weinschenk[13] describes the granite, gneiss, aplite, lamprophyre, mica-schists, quartzite, amphibolite, serpentine and other rocks of the Hohen Tanern.

BOTANY.[1]

The Metric System in Botany.—The recent appearance of two very important works on North American botany, viz., "Gray's Synoptical Fora of North America, Vol. I, part I" and "Britton and Brown's Illustrated Flora of the Northeastern United States and Canada, Vol. I," in which the English units of measurement are used throughout, suggests the necessity of some missionary work among American botanists. Can it be possible that the botanists of this country are the most conservative of our scientific men? We take part from time to time in the action of the American Association for the Advancement of Science, in which in vigorous and logical sentences

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[10] Min. Magazine, XI, p. 141.

[11] 17th Ann. Rept. U. S. Geol. Survey, Pt. 1, p. 14–16.

[12] Quart. Jour. Geol. Soc., May, 1896, p. 320.

[13] Zeitschr. f. Kryst., XXVI, p. 22.

[1] Edited by Prof. C. E. Bessey, University of Nebraska, Lincoln, Nebraska.